Faradic current

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Introduction

- Faradic Current is a type of low frequency current. It is a type of short duration interrupted type current.
- It's duration is 0.1 to 1 ms and frequency is between 50 to 100 Hz
- Faradic type current is usually used for innervated muscles.

Indications:-

Facilitation or initiation of the muscle action: When the patient is unable to produce muscle contraction or finds it difficult to do so, electrical stimulation may be required in assisting to produce voluntary contraction. Patient is advised to produce voluntary contraction along with the electrical stimulation

Reeducation or relearning of new muscle action: In some situations where muscle is not under voluntary control reeducation or relearning

Of muscle action is required. These situations could be:

i. Prolonged disuse ii. Incorrect use.

In these circumstances faradic stimulation may be used to produce contraction and thus help to restore the sense of movement.

In cases where person is using incorrect pattern of movement, correct pattern is taught by faradic stimulation.

Training/Teaching of a new muscle action:

For training or teaching a new muscle action faradic current is used. The cases where teaching a new muscle action is required, could be:

i. Tendon transplantation surgery

ii. Reconstructive operations.

Loosening and prevention of adhesion:

Effusions in the tissues when stays there form adhesion. Adhesions are formed where there is no proper muscle contraction.

If adequate active exercise is not possible, electrical stimulation in the form of faradic current may be used to prevent adhesions.

Improvement in venous and lymphatic drainage:

Alternative contraction and relaxation of muscles produces pumping action, which leads to venous and lymphatic drainage. faradism under pressure is effective for venous and lymphatic drainage.

Maintaining or increasing in range of movement: The movement may be limited by shortening of different tissues and from different causes. Faradic stimulation of muscle to stretch the shortened tissue is used in:

i. Contracture of fibrous tissue and scaring

ii.Deformities like scoliosis

Neuropraxia of a motor nerve

For replacing orthosis: Low frequency stimulation may be used to enhance the function of a paralyzed or weak muscles thus eliminating the need for a splint or brace or orthosis.

Physiological Effects of Low Frequency Currents

- **1. Effect on body tissues**: Tissues contain fluids, which contain ions and thus are good conductor of electricity. Current passing through the body tissues consists a two-way migration of ions and the conductivity of different body tissues varies according to the amount of fluid they contain. Muscle is having good blood supply and so is a good conductor while fat is a poor conductor. The epidermis has a high resistance and thus is a bad conductor.

So for having better conduction of electricity, we use some media like water or gel to lower the resistance for treatment purposes.

2. **Stimulation of sensory nerves**:

When applying a faradic type current mild prickling sensation is felt due to stimulation of sensory nerves.

3. **Stimulation of motor nerves by faradic current**:

Faradic current stimulates the motor nerves and if it is of sufficient intensity, it stimulates muscle to which the nerve supplies.

4. **Effect on muscle contraction**:

Electrical stimulation of motor nerves causes muscle contraction.These contractions help in regaining the properties of muscles as such and also helps in:

i. Increasing metabolism

ii. Removal of waste products

6. **Chemical effects following stimulation**:

Chemical effects are produced at the electrodes due to passing of direct current through the electrolyte. It results in formation and accumulation of chemicals at the electrode site resulting in chemical or electrolytic burn.

- **Contraindication**

1. Certain dermatological condition as psoriasis and eczema.
2. Infection
3. Inflammation
4. Thrombosis
5. Loss of sensation
6. Cancer
7. Cardiac pacemakers

Techniques of Application

Preparation of the Patient

* The patient is positioned so that the part to be treated is comfortably supported with the muscles to be stimulated in a shortened position.

*The skin surface must be examined for any cuts or abrasions, treatment area should be washed to remove sebum and epithelial cells using hot water to lower resistance.

*Size of active electrode is chosen to considering size of treatment area.

*The electrode should be smaller than the pad to prevent the edge of the electrode being bent down on the skin.

*The pads should be soaked in warm tap water, saline or sodium bicarbonate solution before applied to the skin.

*Fixation is achieved with rubber strap or by body weight.

* Explain to the patient sensation.

Methods of Application

1. Motor point stimulation

*For motor point stimulation the active electrode is placed over motor point and the passive electrode is placed over the nerve root or nerve trunk then small current is applied.

*The current may need to be increased and then decreased as the motor point found and good contraction obtain with less current.

2. Group Stimulation

when muscle group is to be stimulated the both the electrodes are placed over the end of muscle group

So current spread through the whole group.

3. Faradic Bath Method

***** Application of the faradic current to the body part in a tub, tray or tank containing waterwateris termed as faradic bath method. eg. Faradic foot bath Method

* Depending upon the placement of electrodes bath can be

1. Bipolar :- Both electrodes are kept in the water

2.Unipolar :- One electrode kept in the water and the other electrode at the any convenient part of the body.

Advantages :- 1. Skin resistance is lowered

2. Water makes perfect contact with the tissues.

Disadvantages:- 1. Current can not be localized

2. Superficial muscles contract more than deep muscles due to the presence of water

3. Chances of electric shock is higher

Position of the patient: Patient sitting over the wooden stool. Foot is placed in treatment tray. Hip and knee are flexed to about 90 degrees. Patient is asked to hold hip knee firmly to maintain contact by using body weight. Place the foot in a bath containing enough warm water to cover the toes.

4. Faradism Under Pressure

Electrical stimulation of muscle combinecombined with compression and elevation of the limb can be used to increase venous and lymphatic drainage and so to relieve edema.

This technique is known as Faradism Under Pressure.

Position of the Patient :-1. Patient in supine position

2.The limb is elevated above the heart level using pillows

3. The pressure bandage is applied over the electrodes, with maximum pressure distal to proximal

4. The skin must be cleaned before treatment
